

EUROPEAN DEBT CRISIS: THEORETICAL AND EMPIRICAL INVESTIGATION OF EXTERNAL IMBALANCES AS ONE OF ITS MAIN CAUSES*

Anna Ruščáková¹ & Jozefína Semančíková²

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Summary

The European sovereign debt crisis that emerged at the end of 2009 and de facto followed the subprime mortgage crisis in the United States, has highlighted the difficulty resulting from significant and deepening external imbalances within the Eurozone since the introduction of the euro. The causes of growing imbalances were predominantly the deepening current account deficits in many peripheral countries and the growing current account surpluses in a vast number of core countries. Therefore, the main aim of the paper is to analyse the impact of the global economic crisis and European sovereign debt crisis on the development of external imbalances within the Eurozone. The methodology is based on the indicator of current account balance, monitoring of development in balance of payments in the selected Eurozone countries and the comparison of the mentioned development before the crisis and after its outbreak. The findings presented in the paper indicate an improvement of the situation in the area of interest in many Eurozone countries. Facts arising from the analysis also highlight the fact that identified changes of the current account balance after the outbreak of the crisis were significant in a large number of analysed countries. This indicates a significant influence of global imbalances on the progress and spreading of the current debt crisis in the Eurozone and a need to re-evaluate the current policy mix conducted in the Eurozone and to mitigate the impact of the serious design failures of the Euro on the analysed issue.

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¹ Anna Ruščáková, Technical University of Kosice, Faculty of Economics, Slovakia, E-mail: anna.rusackova@tuke.sk

² Jozefína Semančíková, Technical University of Kosice, Faculty of Economics, Slovakia, E-mail: jozefina.semancikova@tuke.sk

Key words: *European debt crisis, deficit countries, surplus countries, current account, balance of payments.*

1. INTRODUCTION

The European sovereign debt crisis that emerged at the end of 2009 is, in fact, the continuation of the recent subprime mortgage crisis in the United States (2007) and follows the global financial and economic crisis (2008). (Reinhart and Rogoff, 2011; Ureche-Rangau and Burietz, 2013) Its most important feature is a severe lack of confidence caused by several general system failures of global economic and political order and by serious structural failures of the euro as a project. All of its causes, however, are related to the global imbalances issue, that is nowadays an inherent part of the development of the world economy. Therefore, the crisis highlights the difficulty resulting from significant and deepening external imbalances within the Eurozone since the introduction of the euro and it points out to the danger of global imbalances for the world economy in general. In addition, De Grauwe (2013) looks at the current debt problems in the Eurozone as a problem resulting from considerable current account imbalances in northern and southern Eurozone countries. However, many economists adduce global imbalances and global current account imbalances as the main cause of the financial crisis in general. Bini-Smaghi (2008), especially, considers that financial crisis and global imbalances are “Two sides of the same coin.” In the case of the Asian financial crisis, Corsetti and Roubini (1998) consider an important role of current account deficits in the occurrence of the crisis. Also, Obstfeld and Rogoff (2009) and Portes (2009) point out to a significant relationship between global imbalances and the crisis in connection with the global financial crisis.

However, despite the fact that global imbalances are generally a big challenge for policy makers, the balance of payments deficits are considered a bigger problem than the balance of payments surpluses. The sustainability of such deficits are particularly questionable in the long run, as well as their influence on the real economy. Many authors predominantly maintain the opinion that current account deficits inevitably lead to some corrections, bringing in the long term some adverse consequences for the real economy, i.e., for the development of investments in the economy and its GDP. (Edwards, 2004; de Mello et al., 2011) In addition, Bernanke (2009) concludes regarding the global financial crisis that it is impossible “... to understand this crisis without reference to the global imbalances in trade and capital flows that began in the latter half of the 1990s.” The same is, of course, valid for the European sovereign debt crisis which is taking place in the framework of external positions of systemically significant economies, particularly in Germany, reflecting distortions and entailing risks for the Eurozone’s economy. Obviously, many authors have an entirely different view and state that global imbalances do not play any role in the current financial and debt crisis running in the world economy. They see these crises as the result of failures in financial regulation, political failures in general, and moral hazard on the side of USA and, in the case of the Eurozone, as the result of the development of the German issue. They highlight the role of the single currency “Euro” and the “one-size-fits-all” monetary policy conducted by

the European central bank in fundamentally different conditions determined by serious design failures of the project of the euro, accompanied by the “Euro Illusion” and its grave implications.

Therefore, regarding the Eurozone, it is important to mention the export-led growth strategy preferred and continually followed by some systemically important Eurozone member states. The strategy namely consists in stimulating economic growth by supporting the country’s exports, and is accompanied by interventions of the fiscal and monetary authority with the goal of maintaining the competitiveness of production in the global market economy. Consequently, phenomena such as global imbalances have occurred, accompanied by the role of the USA as the “world banker” and the role of Germany as the “banker for the Eurozone”, which is due to the previously mentioned strategy. (Stiglitz, 2009; Krugman a Wells, 2010)

Based on the mentioned facts, we can state that the current Eurozone crisis is only another test and evaluation of the Lawson Doctrine according to which current account deficits resulting from a shift in private-sector behaviour should not be a public policy concern. Of course, many authors have based their research on the analysis of the economic reality and demonstrated the invalidity of the doctrine. Therefore, it is important to focus on the current account imbalances and the probability of significant turnover on the balance of payments. Moreover, the importance of an analysis of the causes of global imbalances increases when taking into account countries with a considerable deficit, by small closed industrial economies and by countries applying the fix exchange rate regime. The issue of which level of current account deficit should be the subject of concerns of economists and policy makers, Milesi-Ferreti and Razin (1996), for instance, highlight the 5% level of GDP. However, they add that the way of financing the current account deficit is crucial. They warn especially about financing by short-term debt capital. Moreover, Zanghieri (2004) highlights the role of foreign lenders, global financial markets, and rating agencies. Nevertheless, the balance of payments deficit, i.e., the current account deficit higher than 5% of GDP will be at the heart of our attention. Our analysis will also be based on the fact that balance of payments deficit and surplus demonstrate external imbalances that have a significant influence on the development of the real economy in the long run and are connected to the success of maintaining the government budget balance. It will also be based on the fact that current European sovereign debt crisis is a balance of payment crisis. (Bibow, 2012)

Therefore, the main aim of the paper is to analyse the Eurozone external imbalances and their relationship to the European sovereign debt crisis, i.e., to analyse whether the current debt crisis in the Eurozone affects the development of external imbalances within the Eurozone. Moreover, our intention is to show whether the effect was positive or negative, and if it was significant or insignificant. In particular, the ambition of the paper is to draw attention to the intra-area imbalances in the Eurozone and to investigate the role of such imbalances in the creation of the current crisis in the Eurozone. The methodology is based on the indicator of current account balance, description analysis, and standard statistical testing. The findings presented in the paper indicate an improvement of the situation in the area of interest in many Eurozone countries.

Facts arising from the analysis also highlight the fact that identified changes of current account balance after the outbreak of the crisis were significant in many of the analysed countries. This indicates a significant influence of global imbalances on progress and spreading of the current debt crisis in the Eurozone and a need to re-evaluate the current policy mix conducted in the Eurozone and to mitigate the impact of the serious design failures of the Euro on the analysed issue.

To achieve the stated objectives, the rest of this paper is organized in the following way: the first section discusses selected causes of the current European sovereign debt crisis that are connected with intra-area imbalances in the Eurozone. The second section describes data and methodology used in the paper. The third section presents the results and the fourth and final section summarises and concludes.

2. THE PROJECT OF THE EURO

While taking into account the aspects of European Integration and global imbalances issues, one of the most relevant sources of the current European sovereign debt crisis relates to the issue of the EMU design and is linked to the Optimum Currency Area theory. In other words, this group of causes is related to the intra-area imbalances within the Eurozone. As stated in the previous section, a fundamental and significant asymmetry was built into the EMU from its inception. (Hall, 2012) Generally, the root of the asymmetry is that the Eurozone is a currency area consisting of independent nations sharing a common currency, a common monetary authority, and a common monetary policy. At the same time, they are economically heterogeneous and have independent fiscal policies for government spending and taxation and debts denominated in their common currency. Therefore, members of the Eurozone are mainly politically unaccountable to the Union about how they tax and spend, which supports moral hazard in their financial system. Also, this is the main reason why they have run up their government debts. Therefore, it is important to analyse the implications of global imbalances from the view of the European integration issue and in the context of the crisis in the Eurozone. Optimality of a currency area is defined in connection with the attainment of both internal and external balance. (Tavlas, 2009)

Based on the previously stated opinion, it is desirable to analyse the issue in terms of the Optimum Currency Area theory. Authors of the theory mainly recognized the fact that forming a monetary union requires giving up the ability to realise an independent monetary policy and the ability to adjust an exchange rate of a national currency. Therefore, they formulated the criteria that could help alleviate the loss of these essential tools of economic policy among members of a union. Moreover, Krugman (1979) considers a balance of payments crisis as the government's inability to defend fixed parities due to the limitation of its power and argues that money is a key economic instrument for absorbing economic imbalances. Thus, when countries decide to join a monetary union, they deprive themselves of valuable tools used to smooth out the imbalances emerging in the union. For that reason, a currency union absents a functioning adjustment mechanism and ignoring the homogeneity condition is a non-optimal mon-

etary union. In such a monetary union, non-compliance of purchase power parity can happen among its members, which in turn, leads to external imbalances. Persistence of such imbalances can then turn into the balance of payments crisis and, finally, even into a sovereign debt crisis. (Guerreiro, 2014) Non-optimality of the EMU is confirmed, e.g., by Manolopoulos (2011).

Regarding the previous facts, Bonatti and Fracasso (2013) argue that intra-area current account imbalances in the EMU have grown significantly since the establishment of the EMU. This reflects diverging trends in competitiveness between northern and southern countries of the Eurozone. For that reason, Cesaratto (2015) insists that the Eurozone sovereign debt crisis is a balance of payments crisis, tied to capital outflows and current account deficits in the peripheral countries of the Eurozone. Moreover, De Grauwe (2013) warns about the fact that the Eurozone member states issue debts in a currency that is not under their control. Sinn and Wollmershäuser (2012) highlight the role of optimistic expectations about income convergence generated in the Eurozone, the role of an investment boom and ballooning current account deficits financed by short-term private capital inflows in the peripheral countries of the Eurozone that worsened the problem of intra-area imbalances in this monetary union. On the contrary, e.g., Brancaccio (2012) argues that intra-area imbalances in the Eurozone are an integral part of a monetary union. The author attributes such imbalances to the greater degree of financial integration between members of the EMU and shows that it depends only on the individual country following a theoretical approach to the problem of supporting and securing economic growth. Nevertheless, the situation turned sour only when Greece was singled out and when the ECB, IMF, and other international organizations decided to embark on fiscal consolidation. (Chen et al., 2013)

In addition, it is also necessary to draw attention to the unique position of Germany in the Eurozone as a leading export nation, and thus not only to propose the requirement of an effective adjustment mechanism in the Eurozone but also the need to set certain limits on its internal trade. An increasing number of economists consider German neo-mercantilist policies as one of the leading causes of the current European sovereign debt crisis (Bonatti and Fracasso, 2013). In addition, Jager and Hafner (2013) established that the competitiveness of Germany has increased since the introduction of the euro. Therefore, Germany nowadays needs to reconsider its position and its steps because “the only way for other Eurozone countries to lower fiscal deficits without their economies collapsing is through an enormous net export expansion based on both improved productivity and crucially buoyant external demand.” (Baimbridge et al., 2012)

3. DATA AND METHODOLOGY

In our empirical analysis, we employ quarterly observations for the period from 1999Q1 to 2013Q3 on the balance of payments as a share of GDP (the main item: current account balance) from Eurostat. The analysis is focused on the Eurozone countries while the partner of the selected countries is all countries of the world. The analysed countries are Germany, Austria, Cyprus, Estonia, Finland, France, Greece, Ireland, It-

aly, Latvia, Lithuania, Luxembourg, the Netherlands, Portugal, Slovakia, Slovenia, and Spain. However, we exclude Belgium and Malta from the empirical analysis due to the lack of data. Subsequently, we divide the countries into two groups, i.e., deficit and surplus countries, based on the 75 % superiority of deficit or surplus observations during the analysed period. We consider Germany, Luxembourg, the Netherlands, Austria and Finland as surplus countries and the rest of the sample as deficit countries. As we are aware, the European debt sovereign crisis began in 2009Q4 when peripheral countries were highly indebted and unable to repay their debts. Therefore, we split the analysed period into the period before the European debt crisis, i.e., the period until 2009Q3 and the period during the crisis, i.e., since 2009Q4.

For our analysis, we apply description analysis and standard statistical tests using the SPSS statistics and XLStat statistical software.

In the first step, we analyse the surpluses and deficits as a share of GDP and surplus/deficit average before and during the crisis to examine an increase or a decrease in their values. In addition, we investigate whether the reported change was significant or insignificant. In the second step, we examine whether the surplus/deficit average is equal or different, and therefore, whether we can assume that the external imbalance development is different in the selected countries. In the section mentioned, we employ normality tests, e.g., Shapiro-Wilk test and tests for homogeneity of variance, e.g., Levene's test. Based on the results we conclude that the best test to analyse the equality of surplus/deficit average is the Kruskal-Wallis test, since countries did not meet the assumptions valid for the ANOVA test. Finally, we verify whether the surplus/deficit average is statistically different before the crisis in comparison to the surplus/deficit average during the crisis, i.e., whether surplus/deficit average change is statistically significant or insignificant. Based on the findings of normality tests, we apply the parametric two-sample t-test and z-test in the case of normal distribution and Wilcoxon-signed rank test in case of the sample not following a normal distribution. In this section, we have to compare two samples with an equal number of observations. For that reason, we apply 16 observations before the crises, i.e., the period between 2005Q4 and 2009Q3, and 16 observations during the crisis, i.e., the period between 2009Q4 and 2013Q3.

4. RESULTS

4.1. Current account surplus/deficit as a share of GDP (%)

Appendix A.1 presents a current account surplus of the surplus countries as a share of GDP (%) and basic characteristics of the surplus countries. The median of external balance is represented by a surplus in all countries before and during the crisis, except Finland during the crisis. Moreover, the median is almost equal to mean during the analysed period. The values of the first and the third quartile are different in every country with no negative value.

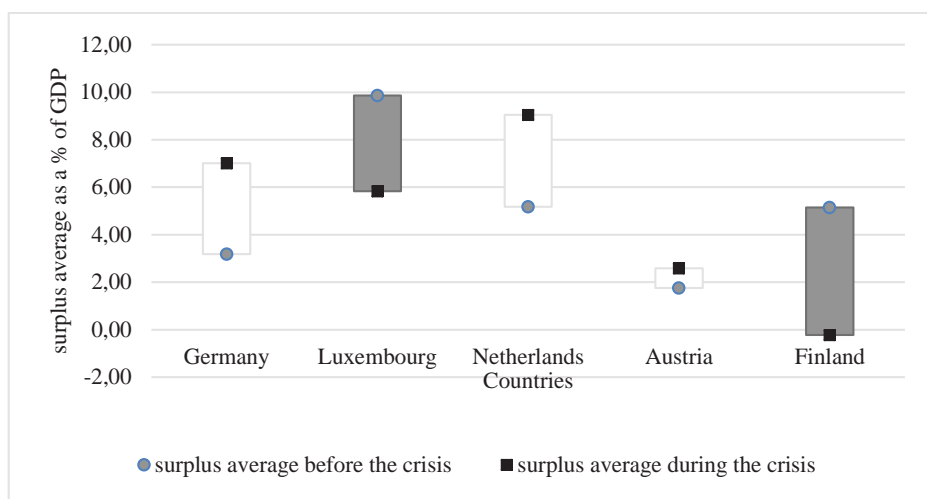
On the contrary, the current account deficit of the deficit countries as a share of GDP (%) and basic characteristics of these countries is presented in the Appendix A.2.

The median of external balance is represented by a deficit in all countries before and during the crisis. Moreover, the median is almost equal to mean during the analysed period, similarly as in the case of surplus countries. The values of first and third quartile are different in every country with negative values, except few countries in the third quartile like France, Italy, Cyprus and Slovenia.

4.2. Surplus/deficit average before and during the crisis

In the second step, we compare the surplus/deficit average of surplus/deficit countries to find out whether these countries experience similar development with a shift from the period before the crisis to the period of the crisis. Strikingly, Fig. 1 shows that surplus countries like Germany, the Netherlands and Austria experience an increase in surplus average during the crisis period. The growth in Germany is over 120.4 % and the Netherlands about 74.5 %. The most striking is the finding that Finland deepened into deficit average of -2.2 %.

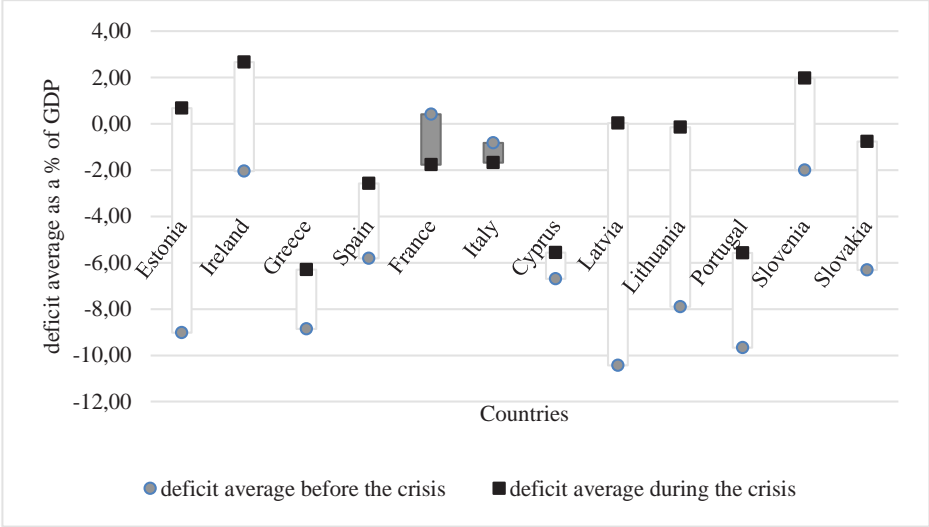
Figure 1: Surplus average before and during the crisis as a % of GDP



Source: Compiled by authors based on data taken from Eurostat (2016)

Compared to surplus countries, almost all deficit countries experience improved development in deficit average during the crisis. Countries like Estonia, Ireland, Latvia and Slovenia had positive average values while, e.g., Italy worsened its average value into deeper negative value. Strikingly, France fell from positive to negative average value as can be seen in Fig. 2.

Figure 2: Deficit average before and during the crisis as a % of GDP



Source: Compiled by authors based on data taken from Eurostat (2016)

4.3. Testing of an average surplus/deficit in the surplus/deficit countries

In the next section, we test whether the previously presented changes in the average surplus/deficit values are significant by applying suitable tests. Our first intention is to apply the ANOVA test, which requires three assumptions: variables are independent, variables follow normal distribution and variances are homogenous.

Table 1 shows the results of the normality test in the deficit countries. Based on the Shapiro-Wilk test we reject the null hypothesis in two cases, i.e., in the case of Cyprus and Portugal and thus the samples do not follow a Normal distribution. Therefore, we cannot apply the ANOVA test for the mentioned countries.

Table 2 shows the results of the normality test in surplus countries. Only in one case, in the case of Germany, variables do not follow a Normal distribution.

Graphical presentation of the Shapiro-Wilk tests in analysed surplus/deficit countries (Q-Q plot) is presented in the Appendix A.3 and A.4.

Table 1: Shapiro-Wilk test for normality in deficit countries
(the level of significance $\alpha=0,05$)

Variable\Test	Shapiro-Wilk
Estonia	0,449
Ireland	0,314
Greece	0,286
Spain	0,056
France	0,412
Italy	0,217
Cyprus	0,038
Latvia	0,510
Lithuania	0,970
Portugal	0,000
Slovenia	0,478
Slovakia	0,848

Source: Compiled by authors based on data taken from Eurostat (2016)

Table 2: Shapiro-Wilk test for normality in surplus countries
(the level of significance $\alpha=0,05$)

Variable\Test	Shapiro-Wilk
Germany	0,001
Luxembourg	0,118
Netherlands	0,886
Austria	0,163
Finland	0,141
Sweden	0,322

Source: Compiled by authors based on data taken from Eurostat (2016)

For testing the homogeneity of variances we apply Levene's test for both groups of countries. Findings support the fact that at least one of the variances is different from the other with the significance level $\alpha = 0.05$. For that reason, we decided to employ a non-parametrical test, e.g., Kruskal-Wallis test that may be called as one-way ANOVA on ranks. As can be seen from Table 3, we reject the null hypothesis in deficit and surplus countries and accept the alternative hypothesis that the samples do not come from the same population. Thus, the average surpluses and deficits are different among countries.

Table 3: Kruskal-Wallis test of origin from the same distribution

Kruskal-Wallis test:	Deficit countries	Surplus countries
K (Observed value)	210,135	80,845
K (Critical value)	19,675	11,070
DF	11	5
p-value (Two-tailed)	< 0,0001	< 0,0001
alpha	0,05	0,05

Source: Compiled by authors based on data taken from Eurostat (2016)

4.4. Testing the average surplus/deficit before and during the crisis

In this section, we present the findings of testing an average surplus/deficit before and during the crisis and examine whether the average surplus/deficit before the crisis is statistically different from the average surplus/deficit during the crisis. In other words, we examine whether the average surplus change that rose during the crisis is statistically significant or insignificant. We employ parametric tests, namely z-test and Student t-test, to samples following a normal distribution and the nonparametric test, namely the Wilcoxon-signed rank test, to samples not following a normal distribution. Moreover, we compare two samples with an equal number of observations before and during the crisis.

Table 4 presents the results of testing the equality of means in surplus countries. The null hypothesis of the equality of means is rejected if the p-value is lower than the significance level $\alpha = 0.05$. In the case of surplus countries, the null hypothesis is rejected in two countries, namely the Netherlands and Finland. Therefore, we confirm that the average surplus during the crisis is statistically significantly different. In the case of Austria, we cannot strongly suggest that the change was significant as both tests show different results. Countries like Germany and Luxembourg show insignificant changes in the average surplus during the crisis.

Table 4: Results of equality of means before and during the crisis in surplus countries

Countries	Wilcoxon signed-rank test	
Germany	0,083	
	z-test	Student t-test
Luxembourg	0,095	0,116
Netherlands	0,008	0,018
Austria	0,003	0,050
Finland	0,0001	0,000

Source: Compiled by authors based on data taken from Eurostat (2016)

Table 5 shows the results of the application to deficit countries. Strikingly, in almost all countries a significant change was confirmed in average deficit during the crisis, except Cyprus and Italy.

Table 5: Results of equality of means before and during the crisis in deficit countries

Countries	Wilcoxon signed-rank test	
Cyprus	0,079	
Portugal	0,007	
	z-test	Student t-test
Estonia	< 0,0001	0,000
Ireland	< 0,0001	< 0,0001
Greece	< 0,0001	0,000
Spain	< 0,0001	< 0,0001
France	0,007	0,016
Italy	0,682	0,688
Latvia	< 0,0001	0,001
Lithuania	< 0,0001	< 0,0001
Slovenia	< 0,0001	< 0,0001
Slovakia	< 0,0001	0,000

Source: Compiled by authors based on data taken from Eurostat (2016)

5. CONCLUSION

Despite the assumption about worsening of the situation in external imbalances in the Eurozone due to the breakout of the European sovereign debt crisis, our findings suggest an improvement of the current account imbalances in a vast number of the analysed Eurozone countries. However, the surplus countries like Luxembourg and Finland experienced a fall in the surplus average from the period before the crisis to the period of crisis. Similarly, deficit countries like France and Italy experienced worsened deficit average values. Strikingly, countries such as Finland and France both experienced a shift into another position, i.e., Finland improved its external position as it got into positive values and France worsened its external position as it got into negative values. Moreover, we proved the significance of analysed changes in the development of current account balance after the outbreak of the crisis in almost all countries, i.e., in the Netherlands, Finland, Portugal, Estonia, Ireland, Greece, Spain, France, Latvia, Lithuania, Slovenia and Slovakia. Based on these results, we argue that global imbalances have a significant influence on the development and spread of the current debt crisis in the Eurozone. There is a need to re-evaluate the current policy mix conducted in the Eurozone and to mitigate the impact of serious design failures of euro on the analysed issue. Considering the non-optimality of the Eurozone as a monetary union that could be interpreted based on the OCA theory, we recommend to policy makers to establish an effective adjustment mechanism in the Eurozone. For example, this could be effectuated in the form of fiscal transfers and large European investment projects realised in deficit countries. Certain limits on internal trade in the Eurozone could be set up to support the EMU's ability to smooth out the imbalances emerging in the union.

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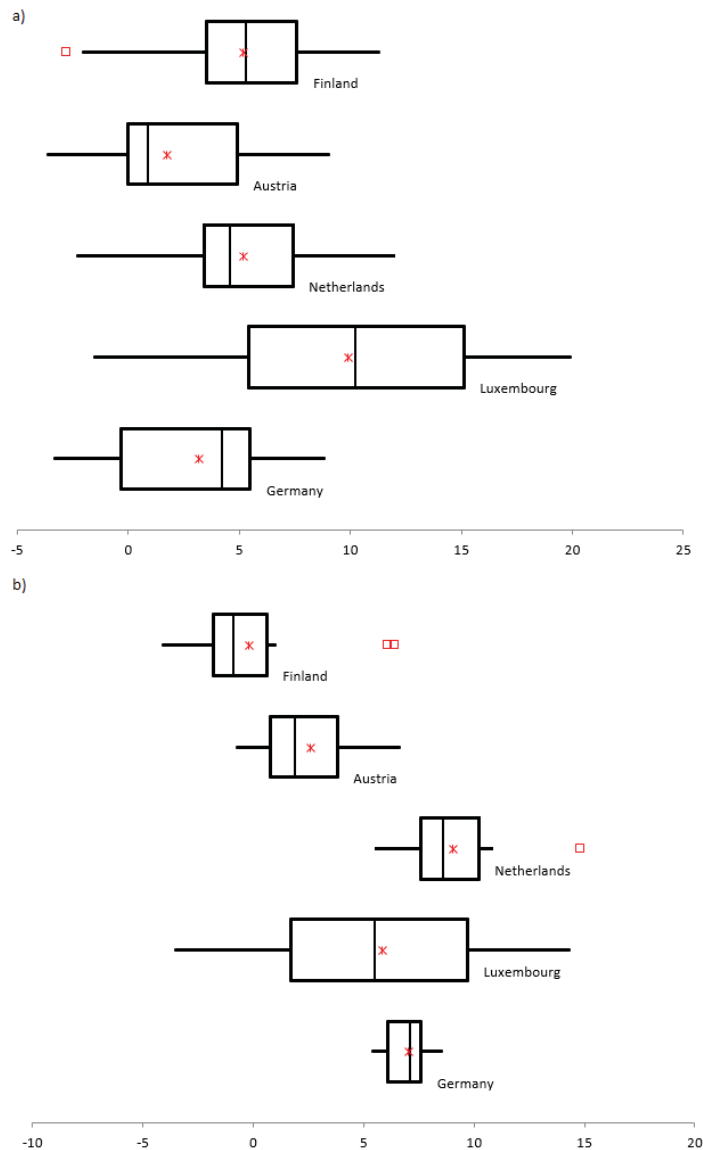
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APPENDIX A

A.1. Current account surplus as a share of GDP (%)

Figure 3: Current account surplus as a share of GDP (%)

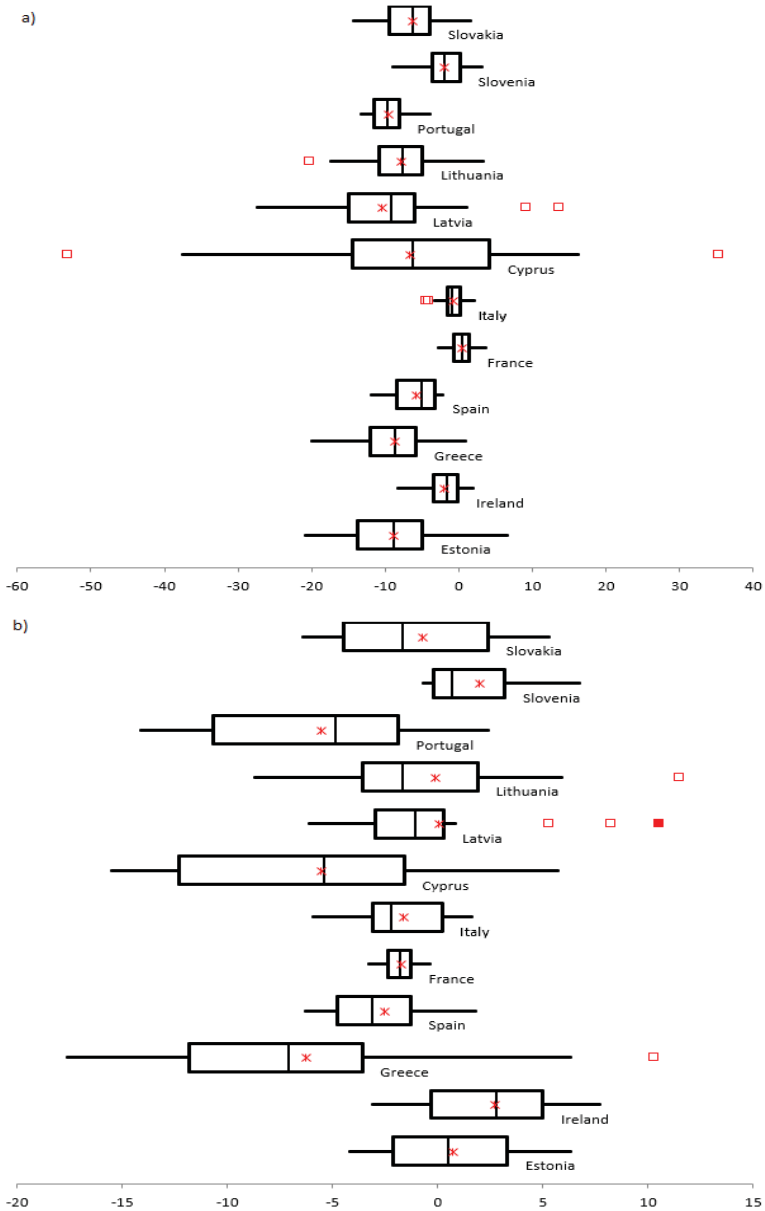


Note: a) before the crisis, b) during the crisis

Source: Compiled by authors based on data taken from Eurostat (2016)

A.2. Current account deficit as a share of GDP (%)

Figure 4: Current account deficit as a share of GDP (%)

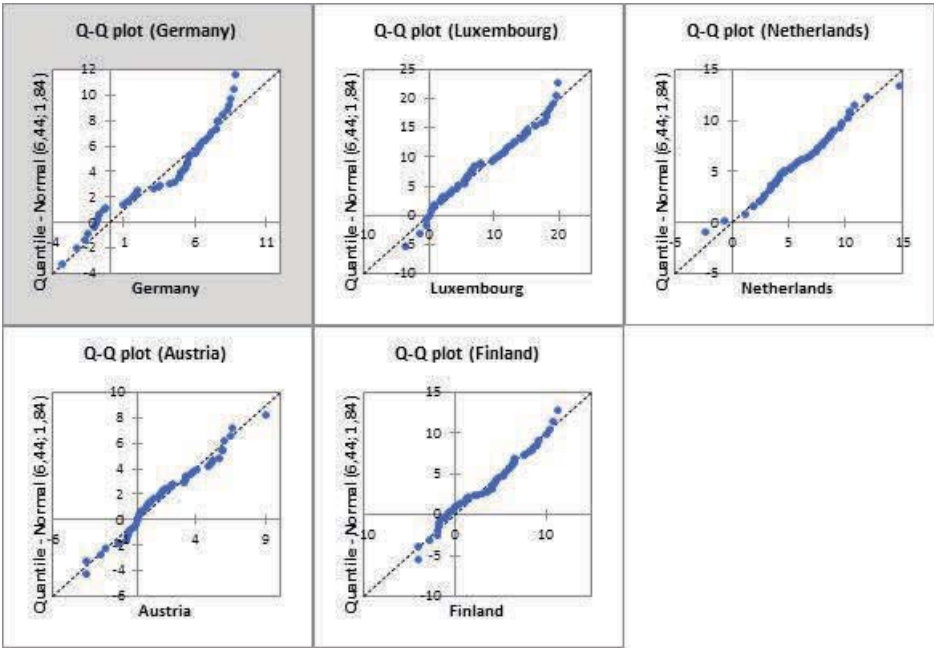


Note: a) before the crisis, b) during the crisis

Source: Compiled by authors based on data taken from Eurostat (2016)

A.3. Q-Q plot of Shapiro-Wilk tests in the surplus countries

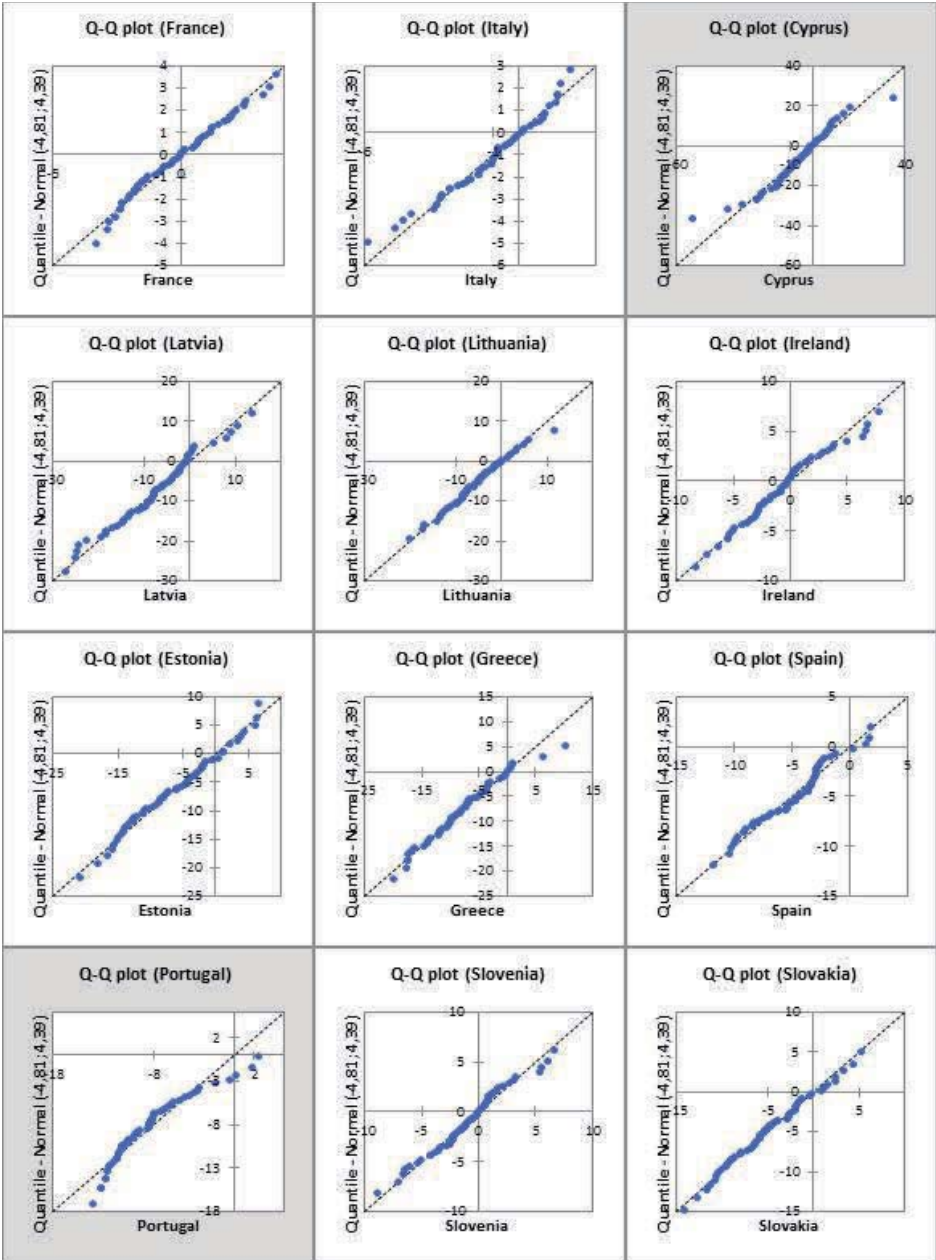
Figure 5: Q-Q plot of Shapiro-Wilk tests in the surplus countries



Source: Compiled by authors based on data taken from Eurostat (2016)

A.4. Q-Q plot of Shapiro-Wilk tests in the deficit countries

Figure 6: Q-Q plot of Shapiro-Wilk tests in the deficit countries



Source: Compiled by authors based on data taken from Eurostat (2016)

EUROPSKA DUŽNIČKA KRIZA: TEORETSKO I EMPIRIJSKO RAZMATRANJE VANJSKIH NERAVNOTEŽA KAO NJEZINOG GLAVNOG UZROKA

Anna Ruščáková³ & Jozefína Semančíková⁴

Sažetak

Europska kriza državnog duga koja je izbila krajem 2009. te je de facto slijedila „subprime“ krizu u SAD-u, naglasila je poteškoće koje su proizašle iz značajnih i sve većih vanjskih neravnoteža u eurozoni od uvođenja eura. Razlozi sve većih neravnoteža bili su većinom sve veći manjak na tekućem računu platne bilance u mnogim perifernim zemljama kao i sve veći višak na tekućem računu platne bilance u velikom broju zemalja u jezgri. Stoga je glavni cilj ovog rada analizirati utjecaj svjetske gospodarske krize i europske krize državnog duga na razvoj vanjskih neravnoteža u eurozoni. Metodologija se temelji na pokazateljima salda tekućeg računa platne bilance, praćenju razvoja u bilanci plaćanja odabranih zemalja eurozone te usporedbi tog razvoja prije krize i nakon njezinog izbijanja. Zaključci u radu ukazuju na poboljšanje stanja u mnogim zemljama eurozone. Analiza također pokazuje da su promjene u saldu tekućeg računa platne bilance nakon izbijanja krize bile značajne u velikom broju analiziranih zemalja. Ona upućuje na značajan utjecaj globalne neravnoteže na kretanje i širenje trenutne dužničke krize u eurozoni te ukazuje na potrebu ponovnog razmatranja sadašnjeg paketa politika u eurozoni te ublažavanja utjecaja ozbiljnih pogrešaka u planiranju eura na analizirano pitanje.

Ključne riječi: europska dužnička kriza, zemlja s deficitom, zemlja sa suficitom, tekući račun, platna bilanca.

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³ Anna Ruščáková, Technical University of Kosice, Faculty of Economics, Slovačka, E-mail: anna.ruscakova@tuke.sk

⁴ Jozefína Semančíková, Technical University of Kosice, Faculty of Economics, Slovačka, E-mail: jozefina.semancikova@tuke.sk